

19/08/25 Hotel Management System

1. Introduction

Purpose: The aim of this HMS is to automate hotel operations such as reservations, room management, billing and reporting while improving efficiency, and guest employee satisfaction. The HMS should support online booking, check in and out, billing, staff tools and manage dashboard.

2. General Description

- ① Client-Server Architecture with a central database, integrate with APIs for payments and notifications
- ② System functions include room reservations, availability tracking, billing, housekeeping updates, reporting
- ③ Users include guests, staffs, managers
- ④ Constraints include 24/7 uptime, high data security and multi-support
- ⑤ Assumptions include internet availability and reliable APIs.

3. Specific Requirements

- Functional

- 1. Staff check-in/check-out management
- 2. Automated billing and payments
- 3. Housekeeping status update
- 4. Online Booking

- Interface

1. Web and mobile responsive UI
2. Payment Gateway, email / SMS API Integration
3. Secure HTTPS communication.

- Budget

<u>Development</u>	:	\$ 30000
<u>Testing</u>	:	\$ 4000
<u>Deployment and Training</u>	:	\$ 5000
<u>Maintenance / year</u>	:	\$ 2000

Total Cost : \$50,000

- Performance

1. Handle 1000 concurrent users
2. Booking / Check-in response under 3s
3. 99.9% uptime

- Design Constraints

1. Stack : Django / Java Backend
 2. React / Angular Frontend
 3. Relational Database
 4. Cloud or on-premises deployment
 5. Non-functional
1. Encrypted, secure login
 2. Intuitive interface
 3. Reliable backups and fault tolerance
 4. Scalability and multibranch support

Summary Schedule and Budget

1. Design and Analysis: 1 month
- Core Modules : 2 months
- Reports and Housekeeping : 1 month
- Implementation / Testing : 1 month
- Deployment / Training : 1 month

19/08/25 Credit Card Processing

- 4. Introduction
 - To enable secure authorisation, processing, and settlement of credit card transactions and detection of fraud.
 - The system will support transaction validation, fraud detection, and reporting.
 - Includes a merchant portal, payment gateway, fraud detection engine, and settlement model.
- 2. General Description
 - Works as a middleman between banks and card networks.
 - Functions such as transaction authorisation, clearing, settlement, fraud monitoring and reporting.
 - Used by merchants, customers, and financial institutions.
- 3. System Requirements
 - Functional
 - 1. Authorise and Authorise transactions.
 - 2. Process payments in real time.
 - 3. Provide fraud detection alerts.
 - 4. Generate transaction reports.
- Non-functional
 - 1. Security: end-to-end encryption, tokenisation.
 - 2. Reliability: token issuance, redundancy.
 - 3. Scalability: supports millions of daily transactions.
- Design
 - 1. Schedule: 6 months for requirements, wire modules, fraud detection, testing & integration, deployment.
- Budget
 - \$80,000 for Requirements and Design, Development, Security and compliance, Testing and QA, Deployment and support.

19/08/25 Library Management System

Introduction

To digitize and streamline book cataloging, borrowing, returning and user management for libraries. The system will manage inventory, user accounts, loan periods, fines, and generate reports. Includes library portal, member portal, database for books, and search functionality.

2. General Description

① Client Server with central book catalog database

- ④ functions include catalog management, borrowing / issuing, member registration, fine calculation, reporting
- ⑤ Users include librarians, members and administration

3. System Requirements

Functional

1. Add, update and Delete book records
2. Register member and loan return account
3. Track borrowing and returning
4. Calculate fines for late returns

Interface

1. Web and desktop UI
2. Barcode scanner integration for books
3. Secure login system

Performance

1. Support 100+ concurrent users
2. Search results in < 2s
3. 99.9% uptime

Design Constraints

1. Database : MySQL
2. Role-based access (members, librarians, admin)

Non-functional

1. Usability : Easy for technical staff
2. Scalability : Daily automated backups
3. Reliability : Daily automated backups
4. Scalability can handle large catalog

Timeline

1. Baseline 5 months for design, core functions
2. Reports, API's, training and deployment
3. Budgeted \$30,000 for Requirements and design, Development, Testing and QA
4. Deployment and training, Maintenance

19/08/25

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Page: _____

Stock Maintenance System

Introduction

Automatic stock tracking, replenishment and reporting to reduce errors and maximize efficiency. The system will manage product details, monitor stock levels, generate alerts for low stocks and create reports. Includes and admin dashboard, stock database, and reporting module with optional barcode migration.

General Description

- ① Centralized inventory database
- ② Functional module stock entry/update, receive alerts, reporting
- ③ Users include store manager, warehouse staff, and administration

Functional Requirements

- 1 Add / Update stock records
- 2 Generate low stock alerts
- 3 Track stock movement
- 4 Generate reports

Interface

- 1 Web and desktop UI
- 2 Barcode /RFID integration

Design constraints

- 1 SQL Database

- 2 Role-based auth

Non-Functional

- 1 Reliable: Daily automated backups
- 2 Scalable: Can handle large catalog
- 3 User-friendly: Easy for technical staff
- 4 Schedule 5 months for Design, Development, Testing and Deployment

Budget

\$35000 Requirements and Design

Development, Testing and QA, Deployment and Training, Maintenance.

MoE/25

Passport Automation System

1. Introduction

simplifying and digitizing passport application, verification & issue. The system will support online applications, document submission, payment integration, and tracking. It includes applicant portal, verification system and integration with government databases.

2. General Description

- ① E-government application integrated with government services. Functions include application submissions, status tracking, fee payment, verification and passport issuance. Users include applicants, passport officials and administrators.

3. Specific Requirements

Financial

1. Submit application online
2. Upload and verify documents
3. Process, payment, issuance
4. Track application status
5. Generate appointment schedule.

Interface

1. Web portal interface
2. Mobile app interface
3. Payment Gateway interface

Performance

1. Must handle 1000+ concurrent users

Design constraints

1. Must meet e-government security protocols

User functional

1. Must be secure, reliable and user-friendly & scalable

Schedule

1. 6 months for Design, Development, Testing and Deployment

Budget

Requirements and Design	\$12000
Development	\$55000
Testing and QA	\$10000
Deployment and training	\$13000
Maintenance	\$10000